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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/697,518

10/30/2003

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EXAMINER

CATTUNGAL, SANJAY

ART UNIT

PAPER NUMBER

3768

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/697,518	<b>Applicant(s)</b> HAIDER ET AL.	
	<b>Examiner</b> SANJAY CATTUNGAL	<b>Art Unit</b> 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-8,13,14 and 21-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-8,13,14 and 21-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 01/07/08 have been fully considered but they are not persuasive. Applicant amended the claims and argued that the references do not teach that each pulser is coupled to a respective transducer. Examiner would like to point out that Fig. 6 element 302-308 show 4 different pulsers attached to different transducer elements. Moreover another reference U. S. Patent No. 5,524,625 to Okazaki is used which the use of multiple pulsers attached to multiple transducer elements.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 13, 14, 21, and 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Pflugrath (US 5722412).

Pflugrath teaches the method and the system where referring now to FIG. 5, the transmit/receive ASIC 20 is shown in greater detail. This ASIC is comprised of sixteen sections, each of which is coupled to six transducer elements of the array 10. The illustrated section 20a is coupled to elements 1, 17, 33, 49, 65 and 81 at the terminals on the left side of the drawing. With six elements per section, the entire ASIC can operate with a 96 element transducer. Each section could be configured to operate with eight elements, in which case the ASIC could control a 128 element transducer, for

instance. Prior to the transmission of an ultrasonic pulse for a scanline, a serial stream of data from the front end ASIC 30 is clocked into transmit aperture select logic 206 at the Transmit Data In and Clk terminals at the right side of the drawing. The transmit aperture select logic 206 uses this data to set multiplexer switches in 3:1 transmit muxes 208 and 210 for the transducer elements that will be active for the particular scanline. For instance, the next scanline to be transmitted may have a transmit aperture comprising elements 1-32. This requires that transmit mux 208 closes a switch to connect pulser 202 to the element 1 terminal, and the transmit mux 210 closes a switch to connect pulser 204 to the element 17 terminal. In a similar manner the transmit muxes in the other fifteen sections of the ASIC will connect pulsers to element terminals 2-16 and 18-32. The back end ASIC 50 is the location of the RISC processor 500, which is used to coordinate the timing of all of the operations of the handheld ultrasound system.

Claims 1, 13, 14, 21, and 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Okazaki (US 5524625).

Regarding Claims 1, 13, 21, and 26 Okazaki teaches method and apparatus for generating one or more signals in an external system (Abstract and Figs.7 and 10) ; controlling a plurality of reconfigurable pulsers in a probe utilizing the one or more signals from the external system; and operating a plurality of transducers utilizing signals from said plurality of reconfigurable pulsers, wherein each reconfigurable pulser is coupled to a respective transducer. (Abstract and Figs.7 and 10)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4, 5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pflugrath in view of Little (US 5893363)

Although Pflugrath does not teach specifically the ultrasound system with low voltage multiplexer, Little teaches the ultrasound system, wherein said multiplexers have inputs coupled to said low voltage inputs and outputs coupled to said transducer drivers.

Claim 4, 5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki in view of Little (US 5893363)

Although Okazaki does not teach specifically the ultrasound system with low voltage multiplexer, Little teaches the ultrasound system, wherein said multiplexers have inputs coupled to said low voltage inputs and outputs coupled to said transducer drivers.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pflugrath in view of Little (US 5,893,363).

Re Claim 6: However, Pflugrath fails to disclose or fairly suggest pulsers to be bipolar, unipolar or combination of both and a conversion to set the timing signal to operate with low voltage pulsers. Little teaches the drive signals for unipolar pulsers

(202) to each terminal of pulser as well as the complementary waveforms applied when bipolar signals are used (See Fig.5, Col. 5, lines 2-10).

Therefore, in view of Little, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the pulsers of Pflugrath with the bipolar and unipolar pulsers in order to make both B-mode and Doppler imaging of the ultrasound machine possible.

Re Claim 7: However, Pflugrath fails to disclose or fairly suggest a digital to analog converter in handle, to transmit timing signals. Little teaches the digital analog converter (338) used in handle to convert the transmit signals to analog format for the use of pulser (See Fig. 6, Col. 7, lines 45-50). Therefore, in view of Little, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the direct connection of Pflugrath with the DAC device in order to produce the signal digital format but transmit them in analog format for more precise processing.

Claim 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pflugrath in view of Chiang (US 5030953).

Re Claim 22: Although Chiang fails to disclose or fairly suggest signals from the external system to comprising timing signals, Chiang mentions the pulsers (22-l-n) to synchronize the signal to be send to transducer (18-l-n). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have timing signals as an input for the pulsers (22-1-n), in order to keep the steady frequency on" transmitting signal towards each transducer in an imaging system.

Re Claim 23: Although, Pflugrath fails to teach the method of plurality of trasducer utilizing signals from the plurality of pulsers Chiang but Chiang shows in Fig. 5 that every individual transducer (18-l-n) is in contact with the dedicated pulsers (22-1-n) through a high voltage driver, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have plurality of transducers utilizing signals from the plurality of pulsers to operate, in order to control the frequency of transmitted signal to the object and making the use of each transducer by being responsive to only one pulser at the time.

Claim 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki in view of Chiang (US 5030953).

Re Claim 23: Although, Okazaki fails to teach the method of plurality of trasducer utilizing signals from the plurality of pulsers, Chiang shows in Fig. 5 that every individual transducer (18-l-n) is in contact with the dedicated pulsers (22-1-n) through a high voltage driver, therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have plurality of transducers utilizing signals from the plurality of pulsers to operate, in order to control the frequency of transmitted signal to the object and making the use of each transducer by being responsive to only one pulser at the time.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SANJAY CATTUNGAL whose telephone number is (571)272-1306. The examiner can normally be reached on 9:30 - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on (571)272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 3737

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Brian L Casler/  
Supervisory Patent Examiner, Art  
Unit 3737

SPC